

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 13.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-007688**Date Inspected:** 09-Jul-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1530**Contractor:** Oregon Iron Works Clackamas, Or.**Location:** Clackamas, OR**CWI Name:** Jose Salazar/ Steve Barnett**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Hinge-K Components**Summary of Items Observed:**

Summary of Items Observed: On this date, Caltrans Quality Assurance Inspector (QA) Clete Henke was present at Oregon Iron Works, Inc. (OIW) in Clackamas, OR for observation of fabrication of the Hinge K Pipe Beams and related activities including in process welding and OIW Quality Control (QC) visual and nondestructive testing. The following observations were recorded:

A.G. Machine Works Inc.

Hinge-K Pipe Beam Fuse Assembly 120A-2:

a124-3 to a124-11

The QA Inspector traveled to A.G. Machine Inc. in Boring, OR where 120A-2 Fuse Assembly had undergone rough machining and was loaded for return to OIW. A.G. Machine personnel presented the QA Inspector with documentation indicating that target Outside Diameter (OD) of 1900mm +/- 3mm had been achieved during machining. Measured end to end at seven 18" increments the following OD data was recorded: 1902.84mm, 1902.77mm, 1902.92mm, 1902.84mm, 1902.71mm, 1902.77mm, 1902.79mm & 1902.77mm. The assembly was transported back to OIW where it was stored in Bay 6 pending final Magnetic Particle Testing (MT), Visual Inspection (VT) and eventual initiation of Electro Slag Welding (ESW) stainless Corrosion Resistant Overlay (CRO).

OIW Fabrication Shop-Bay 3

Hinge-K Pipe Beam Fuse Sub-Assembly 120A-8:

a125 stiffener ring to a124-8 Fuse

Assembly noted above was complete and idle for the duration of the shift.

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Hinge-K Pipe Beam Fuse Assembly 120A-5:

a124-14 to a124-2

The QA Inspector observed no production activity on the assembly noted above for the duration of the shift.

Hinge-K Pipe Beam Fuse Sub-Assembly 120A-6:

A124-9 to a124-1

The QA Inspector observed no production activity on the assembly noted above for the duration of the shift.

Hinge-K Pipe Beam Fuse Sub-Assembly 120A-7:

A124-5 to a124-15

The QA Inspector noted upon arrival that continuous preheat was being applied to WM3-18 circumferential Complete Joint Penetration (CJP) joint joining a124-5 and a124-15 fuse sections. OIW welder John Tellone (WID T23) was subsequently observed performing Flux Cored Arc Welding (FCAW) at "intertack" locations between primary tack welds at the joint referenced above. Mr. Tellone performed FCAW in the vertical (3G) position in accordance with approved Welding Procedure Specification (WPS) 3050. Welding parameters were observed to be in general compliance with the referenced WPS (25.1 volts & 220 amperes). Welder T23 subsequently set-up for Submerged Arc Welding (SAW) at the Inside Diameter (ID) portion of WM3-18 and initiated production welding shortly thereafter. The QA Inspector intermittently observed in-progress Submerged Arc Welding (SAW) at Inside Diameter (ID) portion of circumferential weld identified as WM3-18 on approved shop drawings as noted above. OIW welder T23 deposited SAW root and fill passes in the flat (1G) position in accordance with approved welding procedure 4020. The QA Inspector noted the OIW welder was maintaining continuous preheat utilizing two torches. The QA Inspector observed OIW QC Inspector Jose Salazar regularly monitoring and recording the in process SAW parameters. The QA Inspector also intermittently observed the in process welding parameters and determined that the SAW parameters and minimum preheat/interpass temperature appeared to be in general compliance with the contract requirements -- (35 volts, 585 amperes, 508mm/min travel speed). The production activity noted above was continued at the onset of swing shift by OIW welder Bounheune Savahn (WID S74) and was still underway when the QA Inspector departed at 1530 hours.

Hinge-K Pipe Beam Base Assembly 102A-1:

a111-1 forging to a110-4 base plate

The QA Inspector intermittently observed OIW welder Rick Hinkle (WID H49) during in-process tack welding at multiple stiffeners on the base assembly 102A-1. Tack welding was performed utilizing Flux Cored Arc Welding (FCAW) in the vertical (3F) position in accordance with approved welding procedure. Tack welding at the locations referenced above appeared to be in general compliance with approved contract documents.

Hinge-K Pipe Beam Base Assembly 102A-2:

a111-2 forging to a110-2 base plate

The QA Inspector intermittently observed as OIW welder Craig Jacobsen (WID J6) ground excavated area at Complete Joint Penetration (CJP) weld joint identified as WM3-12/13 in order to create a weldable profile at non-critical repair location described in WRR-2244-20. The location initially contained a rejectable indication which was located during Ultrasonic Testing (UT) by OIW QC on 4-28-2009. The QA Inspector was contacted by OIW Quality Control Inspector Jose Salazar and informed that he was prepared to perform Magnetic Particle Testing (MT) on the prepared surface as required by approved Welding Repair Report (WRR). The QA Inspector

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observed as Mr. Salazar performed the testing described above and noted that no relevant indications were located.

Welder J6 subsequently initiated welding at prepared excavation utilizing Flux Cored Arc Welding (FCAW) and approved Welding Procedure Specification (WPS) 3048. Welder J6 performed FCAW in the vertical (3G) position and maintained continuous preheat utilizing a torch. Mr. Salazar was observed regularly monitoring and recording the in process FCAW parameters for the duration of the repair welding. The QA Inspector also intermittently observed in process welding parameters and determined that the FCAW parameters and minimum preheat/interpass temperature appeared to be in general compliance with the contract requirements -- (25.6 volts, 220 amperes, 203mm/min travel speed). The repair welding described above was completed without incident and appeared to be in general compliance with approved Welding Repair Report (WRR) and contract requirements.

Hinge-K Pipe Beam Base Assembly 102A-4:

a111-4 forging to a110-4 base plate

The QA Inspector intermittently monitored OIW welders Tim O'Brien (WID O6) on day shift and Bui Liem (WID B10) on swing shift during in progress Submerged Arc Welding (SAW) at weld joints W1-08 & W1-77(T23) and W1-20(B10). The referenced connections join a107 and b106 stiffeners. The QA Inspector intermittently observed as welders O6 & B10 deposited SAW passes in the horizontal (2F) position in accordance with approved welding procedure. The QA Inspector noted the OIW welders were maintaining continuous preheat utilizing a torch. Referenced connections W1-08 & W1-77 were completed during the day shift and W1-20 was completed early in the swing shift. The QA Inspector observed OIW QC Inspectors Jose Salazar and Steve Barnett regularly monitoring and recording the in process SAW parameters during day and swing shift respectively. The QA Inspector also intermittently observed in process welding parameters and determined that the SAW parameters and minimum preheat/interpass temperature appeared to be in general compliance with the contract requirements -- (W1-08: 35 volts, 585 amperes, 508mm/min travel speed).

Hinge-K Pipe Beam Fuse Assembly 120A-3:

The QA Inspector observed no production activity on the assembly noted above for the duration of the shift.

OIW Fabrication Shop-Bay 6

Hinge-K Pipe Beam Fuse Assembly 120A-4:

a124-13 to a124-4

The QA Inspector intermittently observed OIW qualified welder Igor Frolov (WID F17) during in-process pick-up welding of Soudotape 316L stainless steel overlay to hinge k pipe beam fuse sub-assembly 120A-4. The weld joint is identified as 316L 3rd layer. Mr. Frolov was observed setting up at low spots on completed 316L 3rd layer and subsequently welding the excavated low spots in the flat position utilizing automatic electro slag welding (ESW) overlay process with a .5mm x 60mm Soudotape 316L stainless electrode, filler metal brand Soudotape class EQ316L automatic. Welder F17 was assisted by an OIW helper during ESW activity. The QA Inspector observed OIW QC Inspector Jose Salazar regularly monitoring and recording the in process ESW parameters. The QA Inspector also intermittently observed in process welding parameters and determined that the ESW parameters (1200 amps, 25 volts, 254mm/min travel speed) and minimum preheat temperature of 70° F appeared to be in general compliance with the contract requirements and approved OIW Welding Procedure Specification (WPS) 7003.

Material, Equipment, and Labor Tracking:

The QA Inspector performed verification of personnel involved with this project and equipment in use. The

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QA Inspector accounted for 6 OIW production personnel and 1 Quality Control Inspector present on this date during day shift and 5 OIW production personnel and 1 Quality Control Inspector present during swing shift.



Summary of Conversations:

As noted in the body of the report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677 , who represents the Office of Structural Materials for your project.

Inspected By: Henke,Clete

Quality Assurance Inspector

Reviewed By: Adame,Joe

QA Reviewer
